

No new matter has been added by the inclusion of new claim 23, as this claim is also supported by Fig. 1 and the accompanying description in the Specification.

As a preliminary matter, Applicant notes the Examiner has again objected to the Drawings. A Second Request for Approval to Make Drawing Change accompanies this submission and is believed to remove the Examiner's basis for objection.

In the outstanding Office Action, the Examiner rejected the pending claims as unpatentable over a combination of Hayashi, U.S. 5,202,307 and Den, U.S. 5,512,538, both previously cited. Applicant respectfully traverses this rejection.

Before addressing the merits of the rejection, Applicant wishes to briefly review the claimed subject matter. As stated in claim 1, Applicants claim a superconducting wire comprising a fine line of an oxide superconductor acting as a matrix or continuous phase, having dispersed therein as a discontinuous phase, a solidified metallic material. The fine line of oxide material has an outer coating of conductive material. One of the key structural features of the superconducting wire of the present invention is the presence of solidified metallic materials dispersed within the oxide superconductor. The solidified metallic materials fill any gaps or voids between oxide superconductor grains or within the oxide superconductor matrix thereby improving the critical current

that can be maintained by the wire, as indicated in the embodiments and examples in the specification. The metallic material may be heated with the oxide superconductor to a temperature at which the metallic material melts. The liquid metal flows into, solidifies and fills gaps and voids in the oxide superconductor material, thereby eliminating undesired voids in the superconductor matrix. Use of the added elements M, C, B and Ti, in the oxide superconductor, provides the further advantages of improved density of critical current and improved mechanical strength.

The Examiner's primary reference does not disclose or suggest the structure of the superconducting wire claimed by Applicant. As seen in Hayashi Fig. 1, the Hayashi wire is encased by an aluminum metal pipe, 1. A metal matrix 2, or continuous phase, holds the dispersed, discontinuous phase 3, ceramic powders composed of superconducting materials. Thus, in the Hayashi structure, the superconductor admittedly exists as particles which are not in contact with each other. Rather, these superconductor particles form a discontinuous phase, dispersed within a metal matrix.

In contrast, in Applicant's claimed invention, the oxide superconductor forms a matrix, or continuous phase, in which metal particles are dispersed to form a discontinuous phase. This is readily seen by viewing Applicant's Fig. 1. Further, throughout the Specification, Applicant refers to

the metal being dispersed or scattered in the superconductor material.

Contrary to the Examiner's suggestion, claim 1 does describe that the metal particles are not in contact with each other because the claim states the metal is dispersed in and fills voids in the oxide superconductor. However, to make this even clearer, Applicant has amended claim 1 to recite that the oxide superconductor forms a matrix, which has dispersed therein a solidified metallic material.

Thus, the structures of the Hayashi wire and the Applicant's claimed wire plainly differ. In Hayashi, the superconductor material is dispersed in a metal. The superconductor material exists in the form of particles which are not in contact with each other. Applicant has claimed a wire where the metal is dispersed in a matrix of oxide superconductor, so that the oxide superconductor forms a continuous phase, not particles.

The Examiner argues this distinction is not in fact a difference. Applicant strongly disagrees. Applicant is not claiming a mixture of oxide superconductor and a metal, but rather metal dispersed, or scattered within an oxide superconductor forming a matrix. To say that it does not matter which material forms the continuous phase, where the material is in continuous contact with itself, and which material forms the dispersed or discontinuous phase, where discrete amounts of material can be identified in a

surrounding matrix, is to say there is no difference between milk (fats dispersed in a continuous phase of water) and butter (water dispersed in a continuous phase of fats). Differences between the identity of the dispersed phase and the identity of the matrix or continuous phase present a real structural difference. In view of this significant difference, Hayashi should be withdrawn as a basis for rejecting the pending claims.

Since Den is cited solely as showing a specific oxide superconductor, it cannot overcome the above-noted deficiency in Hayashi, and it too should be withdrawn as a basis for rejection.

Applicant respectfully requests entry of this Amendment After Final Rejection. This Amendment does not raise any new issues not previously considered by the Examiner. Further, it is believed that these amendments place the case in condition for allowance, or at a minimum, place the claims in better condition for appeal. Entry is requested.

Further, in view of the foregoing amendments and remarks, it is believed that Applicant has demonstrated that his claimed structure clearly differs from and is patentable over the cited references. Issuance of a Notice of Allowance is earnestly requested.

Applicant's undersigned attorney may be reached in

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Respectfully submitted,

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